

AMPHIBIA: ANURA: LEPTODACTYLIDAE

ELEUTHERODACTYLUS EUPHRONIDES

Catalogue of American Amphibians and Reptiles.

Sander, J.M., H. Kaiser, and R. Powell. 2003. *Eleutherodactylus euphronides*.

Eleutherodactylus euphronides Schwartz

Eleutherodactylus urichi euphronides Schwartz 1967:6. Type locality, "Grand Etang, 1700 feet (519 m), St. Andrew Par., Grenada [West Indies (61°42'00"W, 12°05'45"N)]." Holotype, Museum of Comparative Zoology (MCZ) 43229, an adult female, collected by D.C. Leber and A. Schwartz, 25 February 1961 (examined by HK).

Eleutherodactylus euphronides: Kaiser et al. 1994b:790.

• **CONTENT.** The species is monotypic.

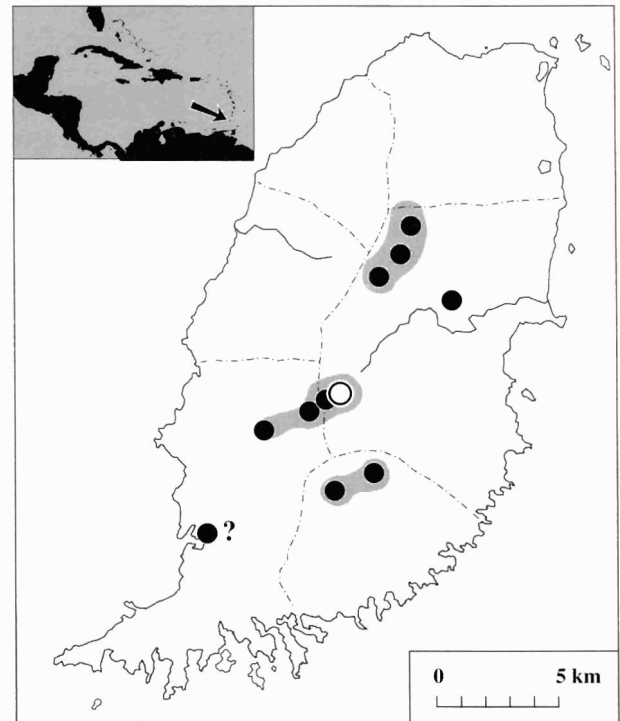
• **DEFINITION.** *Eleutherodactylus euphronides* is a medium-sized member of the genus (maximum known SVL of males to 27 mm, of females to 39.4 mm; Kaiser et al. 1994b) with a dark brown dorsum, a cream venter, and mottled labial areas. A dark supratympanic stripe extends from the corner of the eye to the armpit. A cream interocular bar is never present. The posterior surfaces of the thighs are orange-brown to red. The upper iris is bronze. The chromosome complement of $2n = 32$ is of a ZW/ZZ sex determination system and possesses an unusually large heterochromatic W chromosome (Kaiser 1996, Schmid et al. 2002). See also **Comments**.

• **DIAGNOSIS.** *Eleutherodactylus euphronides* can be distinguished from *E. johnstonei*, the only other species of *Eleutherodactylus* confirmed from Grenada, by having discs on fingers III and IV that are at least twice as wide as the digit (less than twice as wide in *E. johnstonei*) and in having orange or red color on the posterior surfaces of the thighs (lacking in *E. johnstonei*). *Eleutherodactylus euphronides* is most similar to *E. shrevei* from St. Vincent, with which it was subspecifically allied until recently (Kaiser et al. 1994b). These two species are difficult to differentiate morphologically when preserved, but allozyme differences, chromosomal variation (Schmid et al. 2002), and vocalizations "provide conclusive evidence for distinctiveness at the species level" (Kaiser et al. 1994b).

• **DESCRIPTIONS.** Only the original description in Schwartz (1967) and that of Kaiser et al. (1994b) are applicable; all other published descriptions (e.g., Schwartz and Henderson 1991) included references to populations no longer considered conspecific. Kaiser et al. (1994b) and Kaiser and Henderson (1994) described the call; the two-note call mentioned by Schwartz (1969) apparently does not apply to this species.

• **ILLUSTRATIONS.** Malhotra and Thorpe (1999) and Schmid et al. (2002) provided color photographs. Kaiser et al. (1994b) included black and white photographs of an adult female, a line drawing of the hand and foot, and an audiospectrogram of the call. Kaiser and Henderson (1994) included a black and white photograph. Schwartz (1967) provided line drawings.

• **DISTRIBUTION.** The species is known only from mesic forests at higher elevations (> 300 m) on Grenada (Kaiser and Henderson 1994), although Schwartz (1967) described a series from St. George's, near sea level (see **Remarks**). Hedges (1999) listed an elevational range of 300–840 m and a total range of 16 km². Kaiser et al. (1994b) noted that *E. johnstonei* has encroached on areas occupied by *E. euphronides* and suggested that popu-



MAP. Distribution of *Eleutherodactylus euphronides*; the circle marks the type locality and dots indicate other known locality records. The low-elevation population noted by Schwartz (1967) has apparently been extirpated and is indicated with a question mark (see **Remarks**).



FIGURE 1. Adult female *Eleutherodactylus euphronides* (NMC 35010-3) from near Mount St. Catherine, St. Andrew Parish, Grenada (elev. ~650 m).

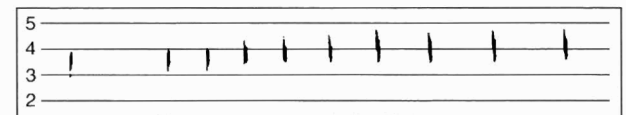


FIGURE 2. Audiospectrogram of the call of *Eleutherodactylus euphronides* from Grenada (modified from Kaiser et al. 1994b). The horizontal axis is time (= 0.33 sec). The vertical axis is frequency (1000 Hz). The recording was made at approximately 24°C (± 2°C).

lations of the latter might be declining as a consequence. In contrast, Germano et al. (2003) discussed sympatry of *E. johnstonei* and *E. euphronides* in the Grand Etang Forest Reserve, where the presence of the former did not appear to exert a strong negative influence on the latter. Distribution maps were previously

published in Kaiser et al. (1994b) and Schwartz and Henderson (1991, as *E. urichi euphronides*).

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** Schwartz (1967) described the taxon. Schwartz (1969) listed *E. euphronides* (as *E. urichi euphronides*) and provided an erroneous description of the call. Hardy (1970) voiced concerns regarding the similarities between the Grenada and St. Vincent populations and *E. urichi*. Hardy (1984) described the egg tooth. Hedges (1989) did not include the species in any specific group. Kaiser and Henderson (1994) described habitat and presented conservation issues. Kaiser et al. (1994a) compared this species to *E. amplinympha*. Kaiser et al. (1994b) elevated the taxon to full species and provided a detailed description. Kaiser (1993, 1995, 1996) and Kaiser et al. (1994c) discussed phylogeography. Kaiser (1997) described the relationship between *E. euphronides* and a potential competitor, *E. johnstonei*. Schmid et al. (2002) described in detail the chromosomes of *E. euphronides* after conventional staining, fluorescent banding, and *in situ* hybridization with oligonucleotide probes. Their findings identify *E. euphronides* as having one of the smallest genomes among amphibians along with one of the largest W chromosomes. Germano et al. (2003) documented the presence of *E. euphronides* and *E. johnstonei* in the forest interior at Grand Etang, where males of both species were calling virtually side-by-side.

References to *E. euphronides* appear in notes, checklists, keys, and general works of Censky and Kaiser (1999), Frost (1985), Glaw et al. (1998), Groome (1970), Grouard (2001), Kaiser et al. (1994a), Lescure (1987, as *E. urichi*; 2001), Lynch and Duellman (1997), Malhotra and Thorpe (1999), Murphy (1996), Powell et al. (1996), Schwartz (1969), Schwartz and Henderson (1985, 1988, 1991), and Schwartz and Thomas (1975).

• **REMARKS.** The low-elevation population described by Schwartz (1967) presumably led to Groome's (1970) mistaken assumption that both *E. urichi* and *E. euphronides* were present on Grenada. This population and possibly others at lower elevations appear to have been extirpated, presumably as a consequence of competition with *E. johnstonei* (Kaiser et al. 1994b).

Schwartz (1967) described specimens from Tobago and suggested that they were *E. urichi urichi* × *E. urichi euphronides*. Murphy (1997) indicated that these were *E. urichi*.

• **ETYMOLOGY.** The species name apparently was derived from the Greek, *euphron*, used as a euphemism for "night," presumably in reference to the nocturnal habits of these frogs.

• **COMMENTS.** Eggs are gray in color and larger in diameter than those of *E. johnstonei*. One clutch observed in 2002 was guarded by a female (JMS, pers. obs.).

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